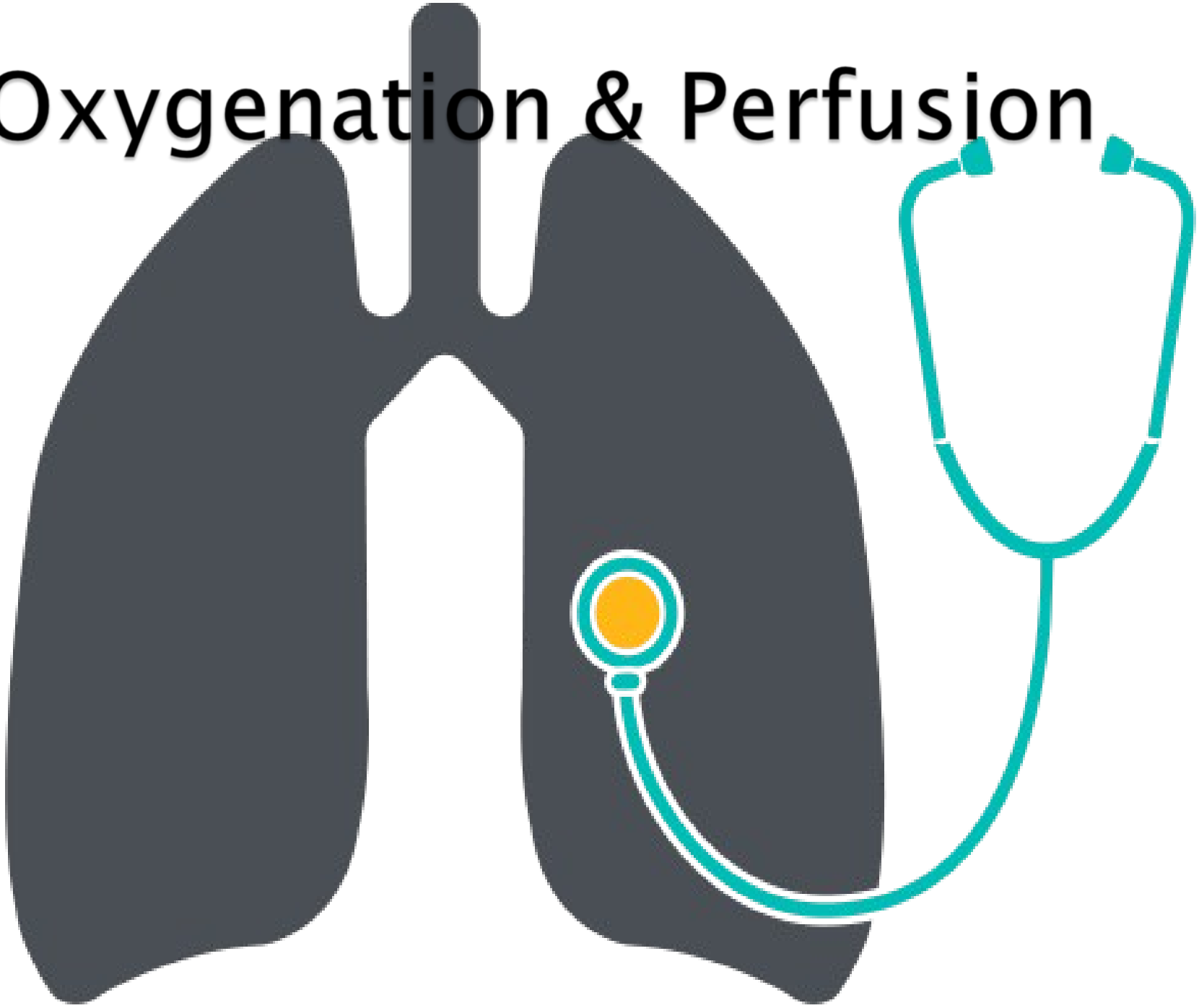
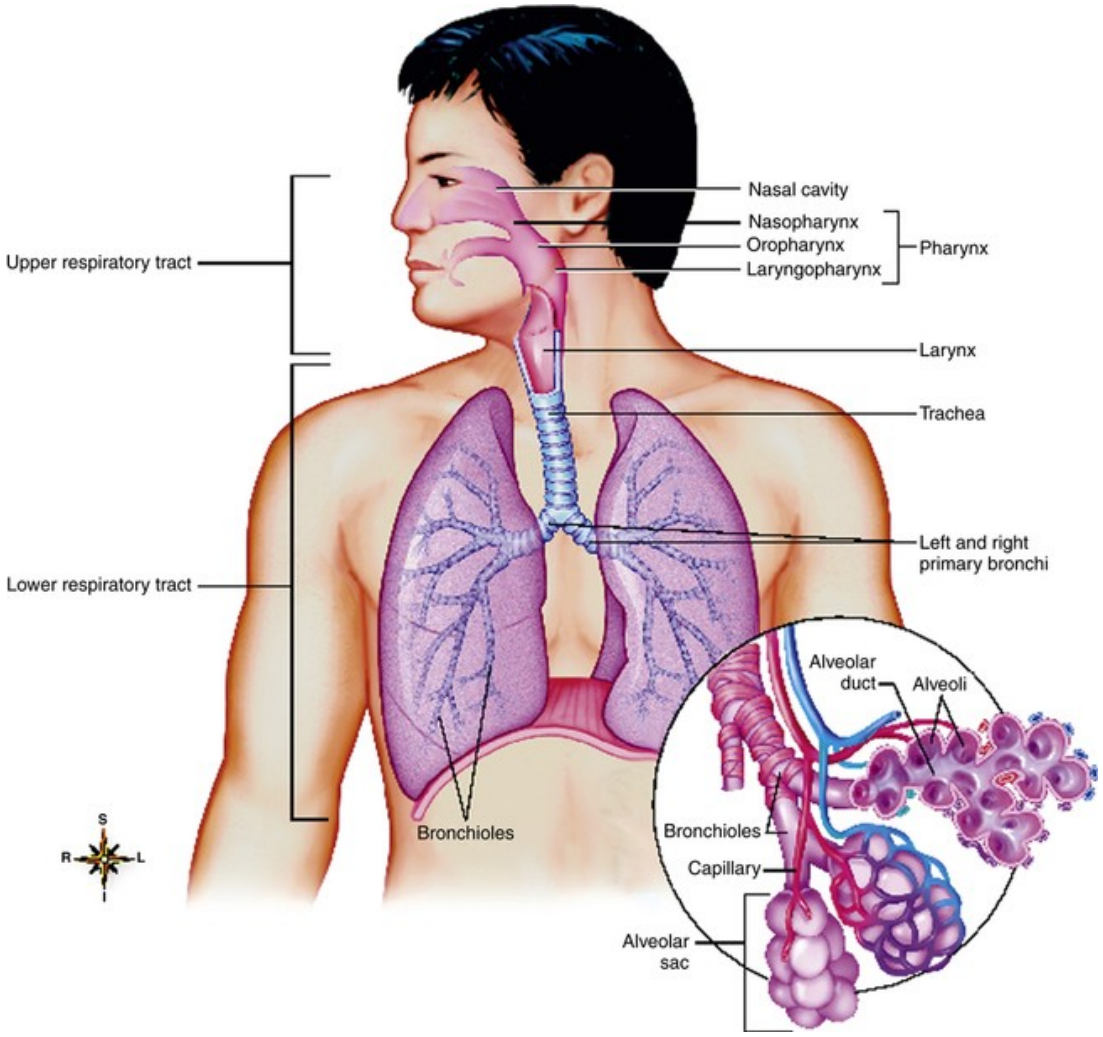
Oxygenation & Perfusion



Anatomy & Physiology of Oxygenation

- Life depends on a constant supply of oxygen
- The demand for oxygen is met by **cardiopulmonary system**
- Oxygenation of body tissues depends on several factors:
  - Integrity of the airway system
  - Properly functioning alveolar system
  - Properly functioning Cardiovascular system and blood supply

Anatomy of Respiratory System



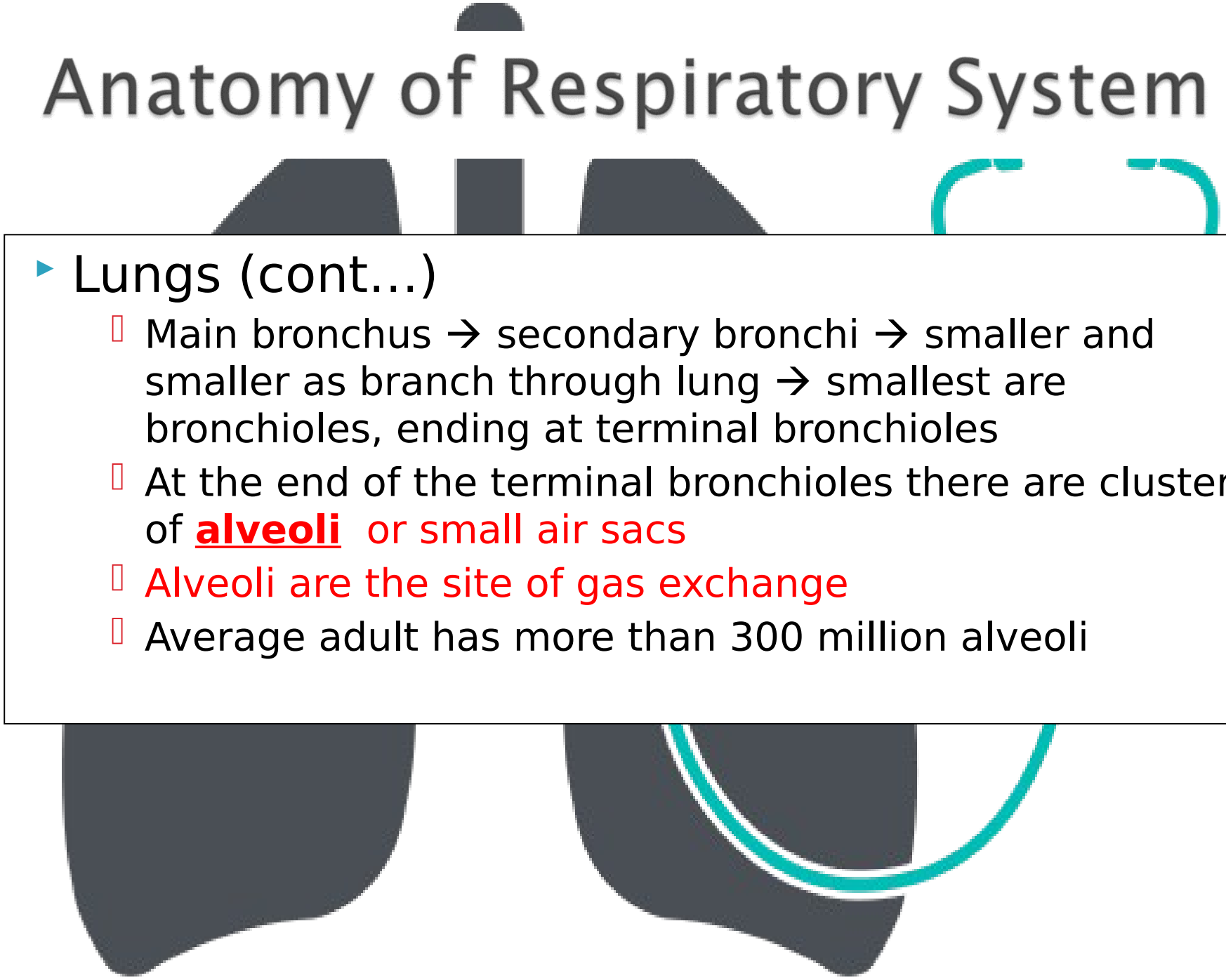
Anatomy of Respiratory System

- Airway
  - Begins at the nose and ends at the terminal bronchioles
  - Pathway for the transport and exchange of O2 & CO2
  - Divided into the upper and the lower
    - Upper airway → nose, pharynx, larynx, & epiglottis
      - Main function is to warm, filter, and humidify inspired air
    - Lower airway → trachea (wind pipe), bronchi, and bronchioles
      - Major functions are
      - conduction of air,
      - mucociliary clearance (cilia, hair like projections propel trapped material, cough helps to get it out) Taylor's p. 1398
      - production of pulmonary surfactant (detergent-like phospholipid, reduce tension of the alveoli, preventing alveoli collapse

Anatomy of Respiratory System

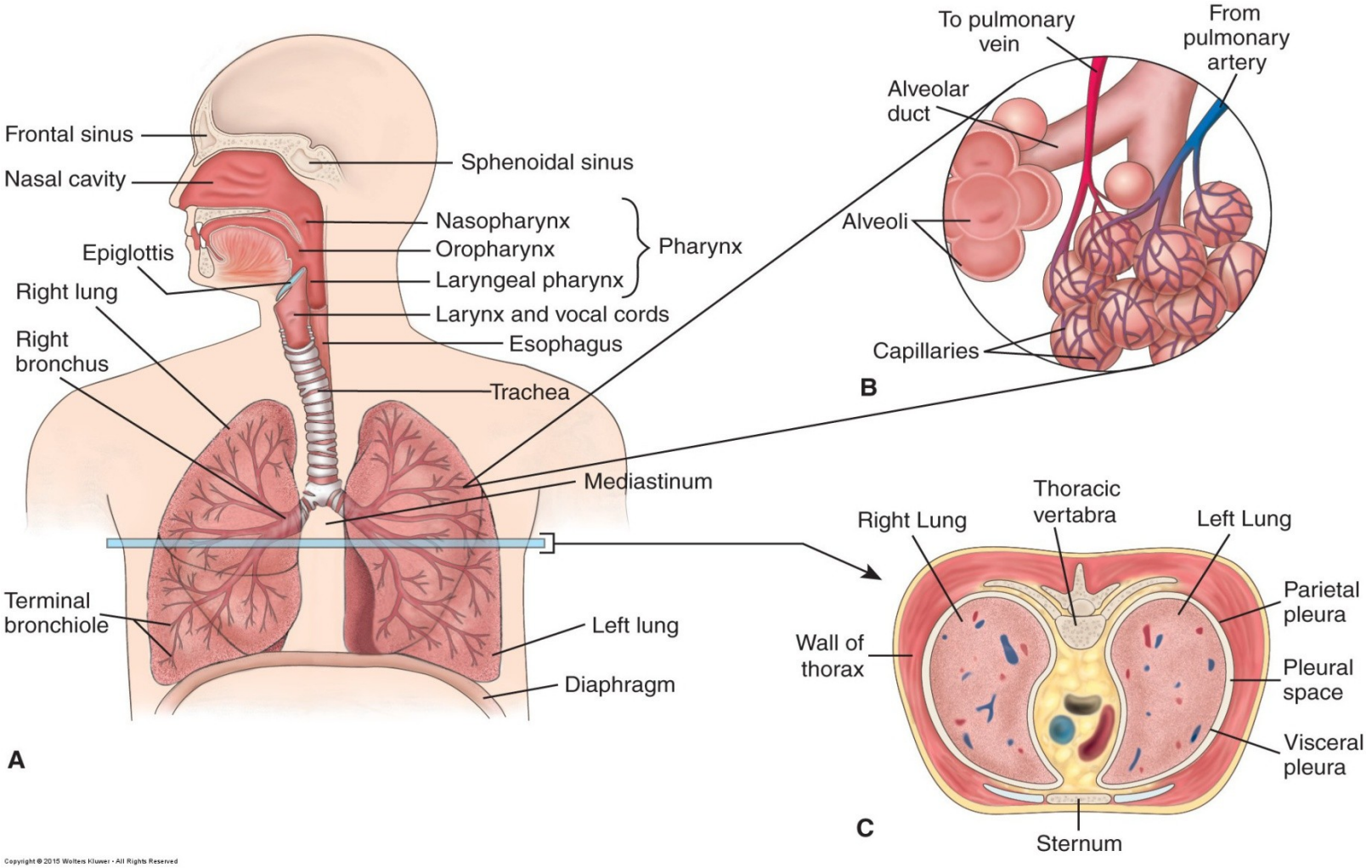
- Lungs
  - Main organs of respiration
  - Located within the thoracic cavity on the right and left sides
  - Extend from the base at the level of the diaphragm to the apex (top), which is above the first rib
  - The heart lies between the right and left lung
  - Each lung is divided into lobes
    - Right lung has 3 lobes
    - Left has 2 lobes

Anatomy of Respiratory System

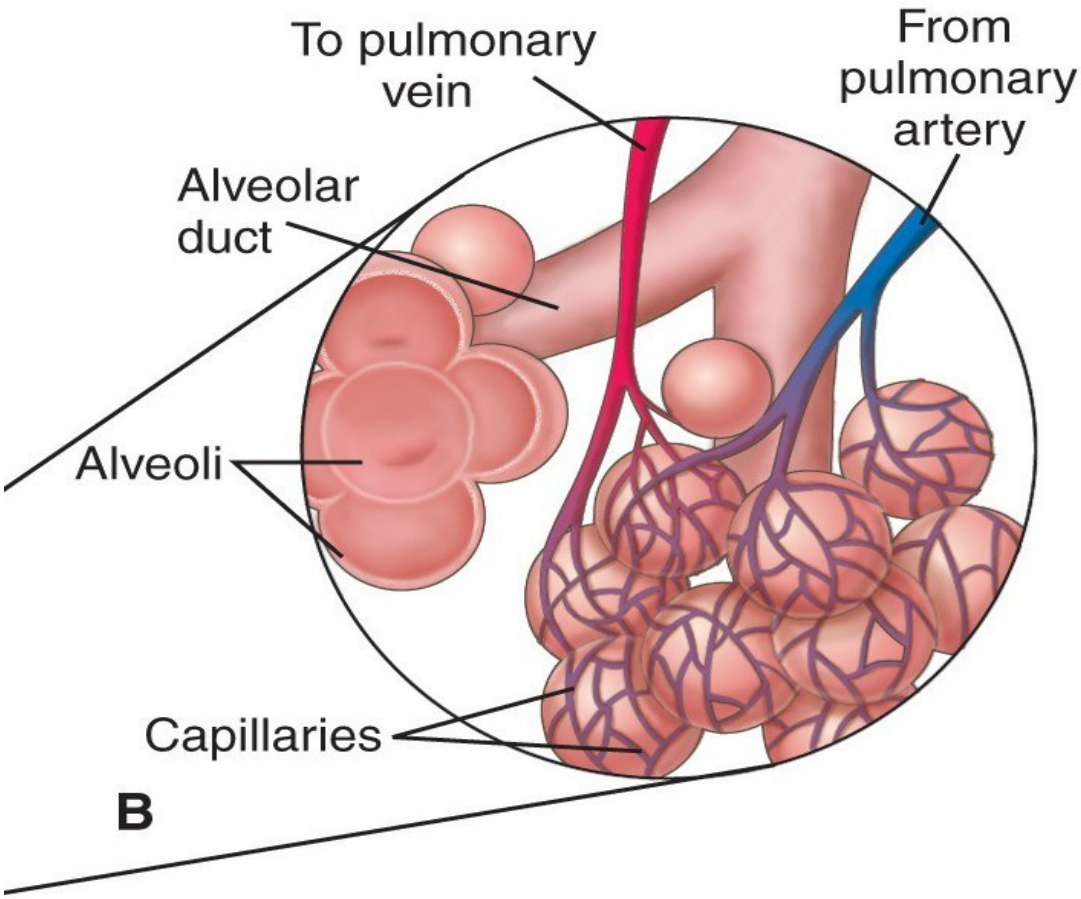


- Lungs (cont…)
  - Main bronchus → secondary bronchi → smaller and smaller as branch through lung → smallest are bronchioles, ending at terminal bronchioles
  - At the end of the terminal bronchioles there are clusters of **alveoli** or small air sacs
  - Alveoli are the site of gas exchange
  - Average adult has more than 300 million alveoli

Anatomy of Respiratory System



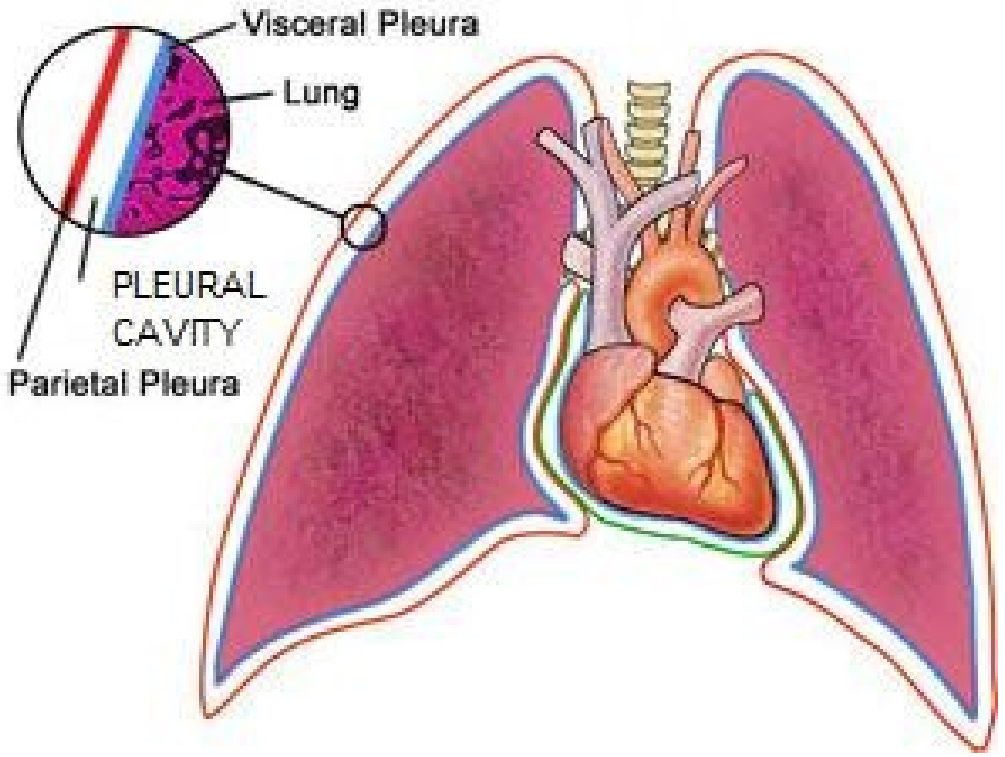
Anatomy of Respiratory System



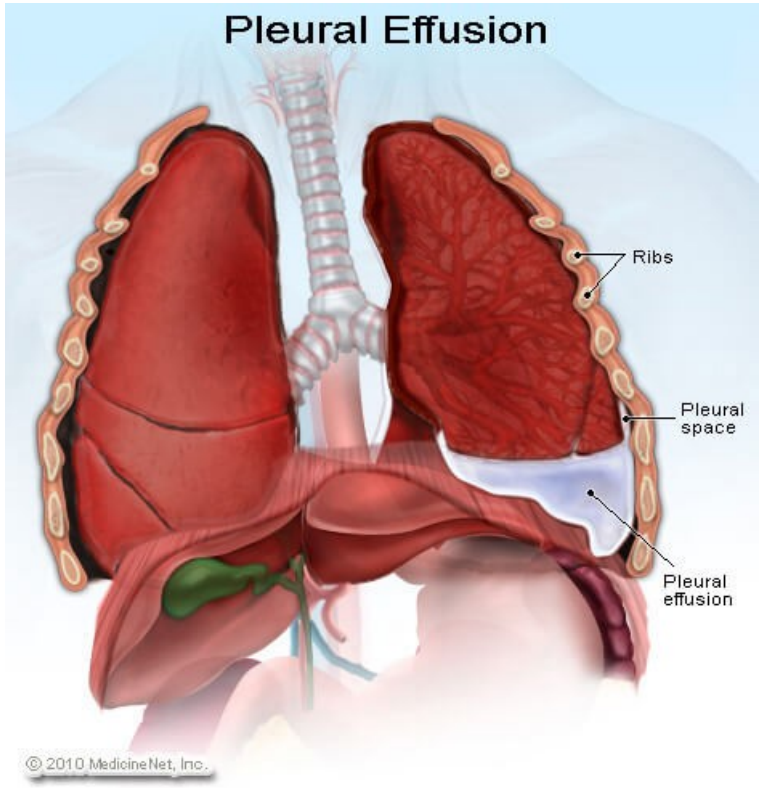
Anatomy of Respiratory System

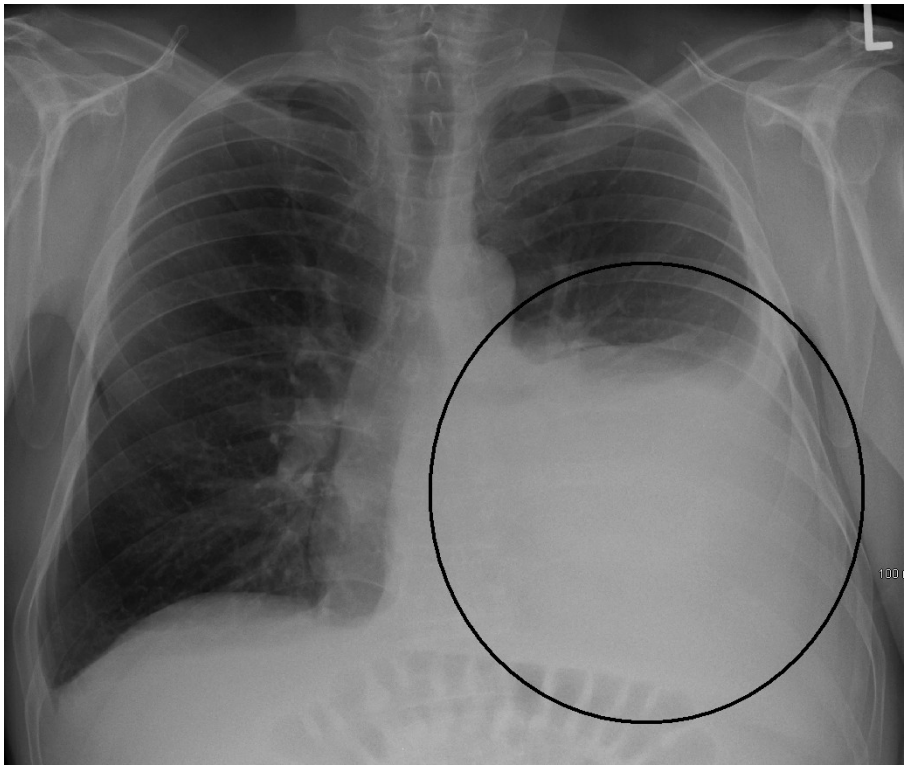
- Lungs and thoracic cavity are lined with a serous membrane called the **pleura**
  - Visceral pleura covers the lungs
  - Parietal pleura lines the thoracic cavity
  - **Pleural space** lies between the two layers

Anatomy of Respiratory System



Pleural Effusion





Physiology of the Respiratory System

- Gas exchange (intake of O2 and release of CO2) is made possible by pulmonary ventilation, respiration, and perfusion
  - **Pulmonary ventilation** refers to the movement of air into and out of the lungs
  - **Respiration** involves gas exchange between the atmospheric air in the alveoli and blood in the capillaries
  - **Perfusion** is the process by which oxygenated capillary blood passes through body tissues

Pulmonary Ventilation

- Pulmonary ventilation (breathing)
  - Movement of air into and out of the lungs
  - Has 2 two phases: inspiration (inhalation) and expiration (exhalation)
    - **Inspiration**, the active phase, involves movement of muscles and the thorax to bring air into the lungs
    - **Expiration**, the passive phase, is the movement of air out of the lungs

Pulmonary Ventilation Taylor's p. 1399

- During inspiration:
  - Involves diaphragm and external intercostal muscles
  - Air moves from an area of greater pressure (outside air) into an area of lesser pressure (within the lungs)
- During exhalation
  - Relaxation, or recoil, of these structures results in expiration
  - Air in the lungs moves from an area of greater pressure to one of lesser pressure and is expired

Pulmonary Ventilation

- Other physical factors contribute to airflow in and out of the lungs, these include:
  1. Condition of the muscle of airway
  2. Compliance of lung tissue (EX: emphysema)
  3. Airway resistance

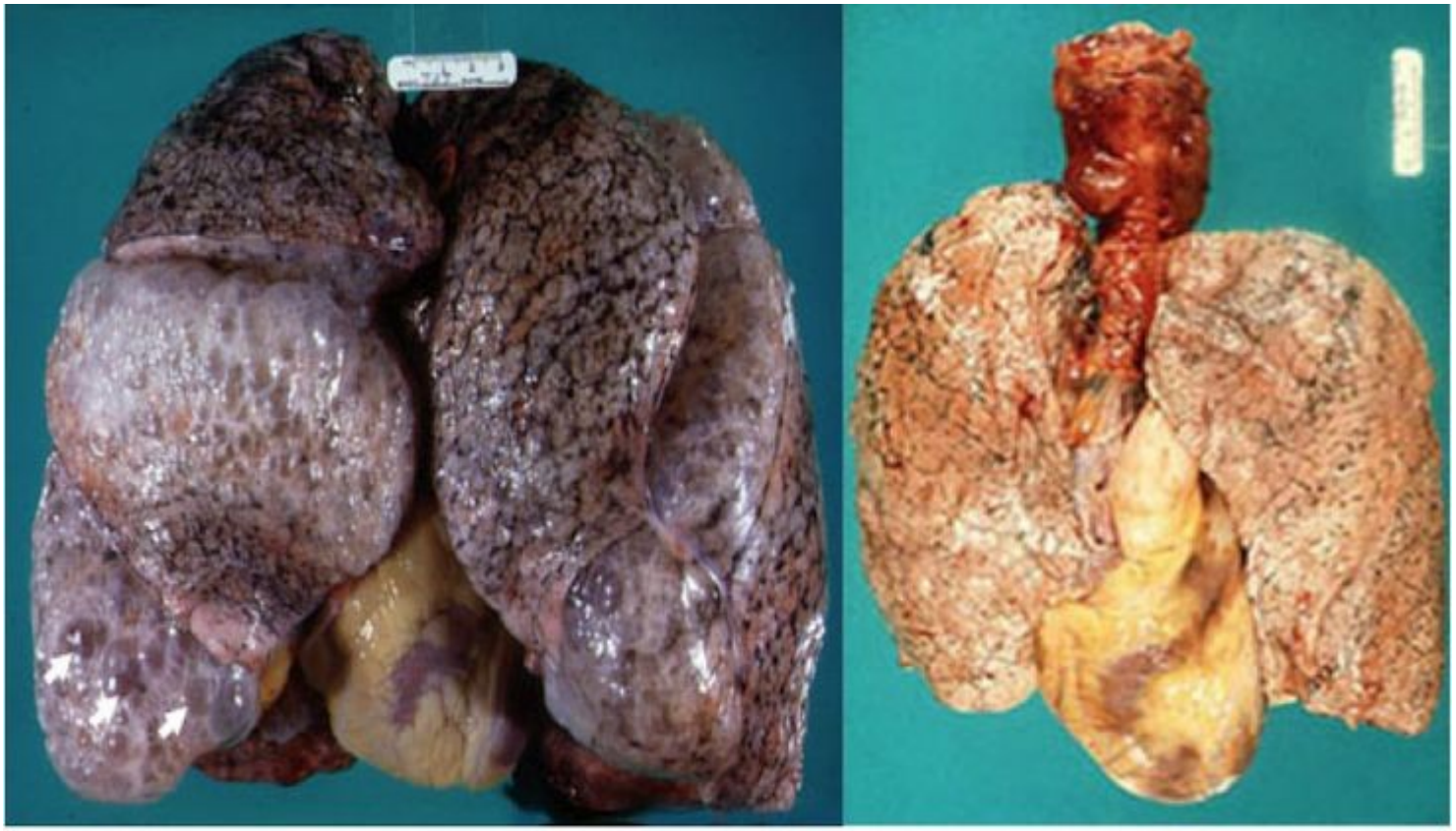
Condition of the Musculature

- Weakening of the muscles can contribute to less effective inhalation and exhalation
- Accessory muscles of the abdomen, neck, and back are used to maintain respiratory movements at times when breathing is difficult → movement is called **retraction**

Lung Compliance

- Ability of lungs to adequately fill with air during inhalation
- Normal elasticity of lung tissue, aided by the presence of surfactant
- A stiff, noncompliant lung (like a new balloon) requires a greater inspiratory effort to inflate it
- Emphysema (a chronic lung condition) and normal changes of aging result in decreased elasticity of lung tissue, which in turn, decreases compliance

Lung Compliance



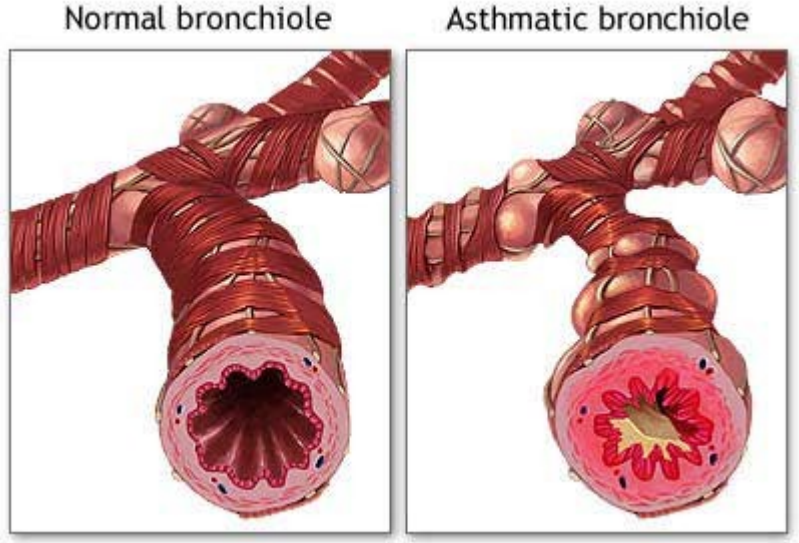
Emphysema

Normal Lungs

Airway Resistance

- Refers to any impediment or obstruction that air meets as it moves through the airway
  - Any change in bronchial diameter or width causes airway resistance (ex: Asthma: inflammation on airway, narrowing the bronchial diameter)
  - Obstruction in any part of normal passageways impedes respiration
    - Piece of food, a coin, or a toy)
    - Secretions (e.g., excessive or thickened secretions) or tissues (e.g., tumors or edema)
  - Poor neck positioning can also impede respiration: right pillow height is important

Airway Resistance



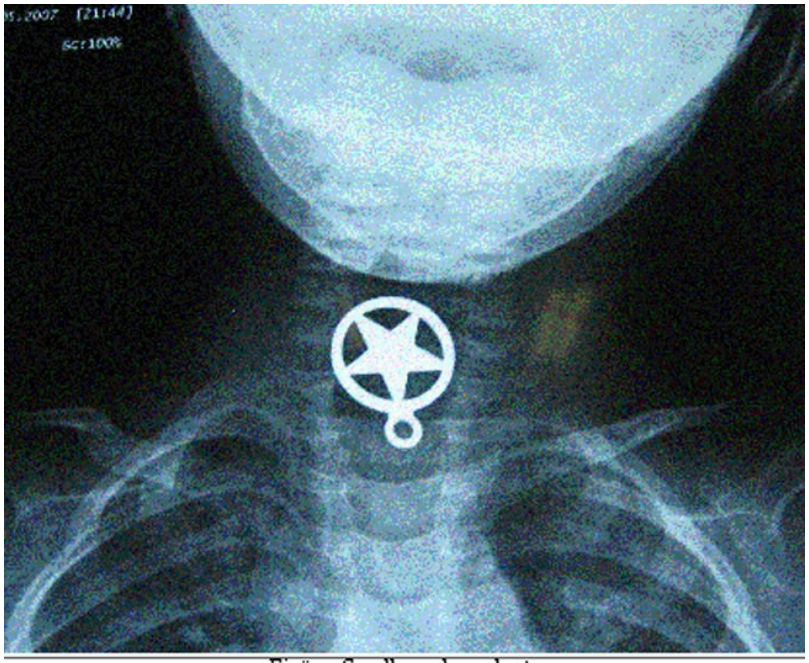
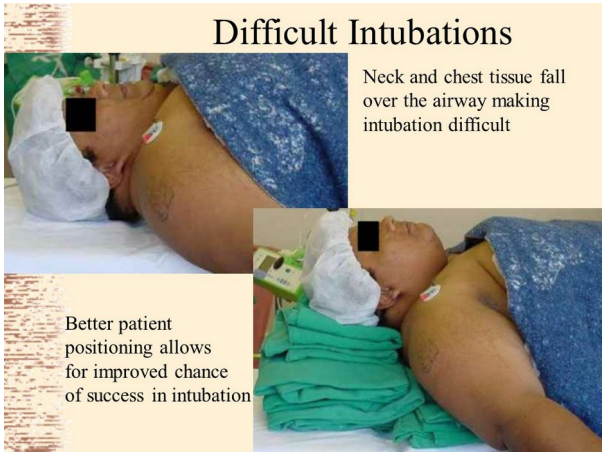


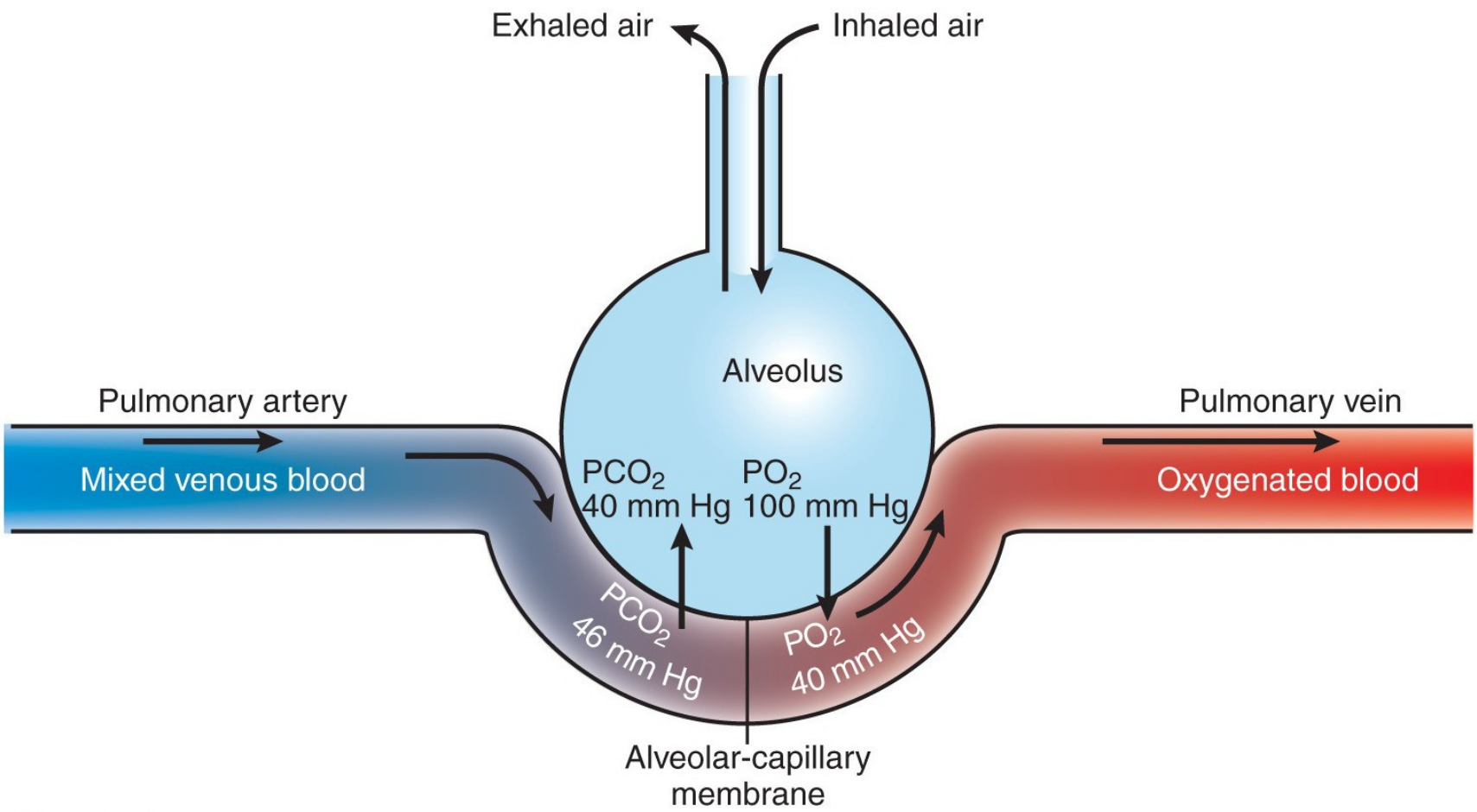
Figure: Swallowed pendant.



Respiration

- "Gas Exchange" → occurs at the terminal alveolar capillary system via diffusion
  - Diffusion → movement of gas or particles from areas of higher pressure or concentration to areas of lower pressure or concentration
- In respiration, diffusion (molecules move from high concentration to low concentration) refers to the movement of oxygen and carbon dioxide between the air (in the alveoli) and the blood (in the capillaries)
- Diffusion video

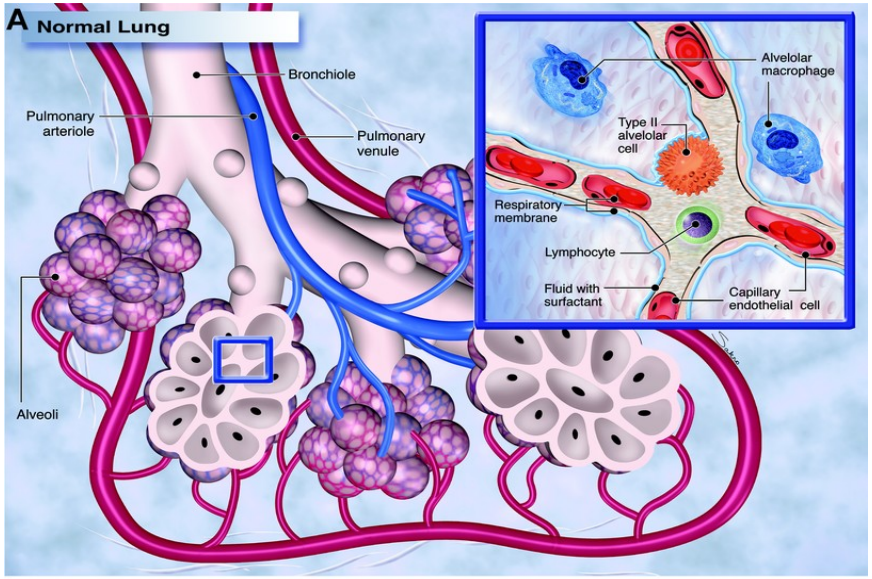
Gas Exchange in the Alveolus

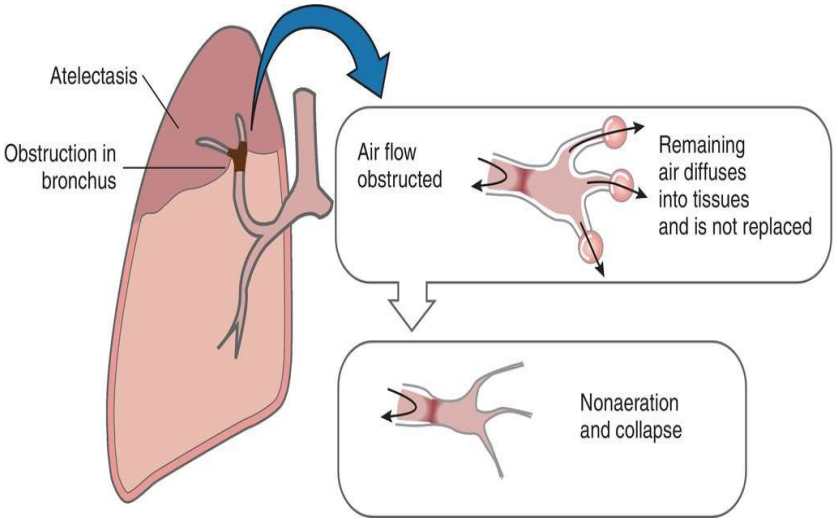


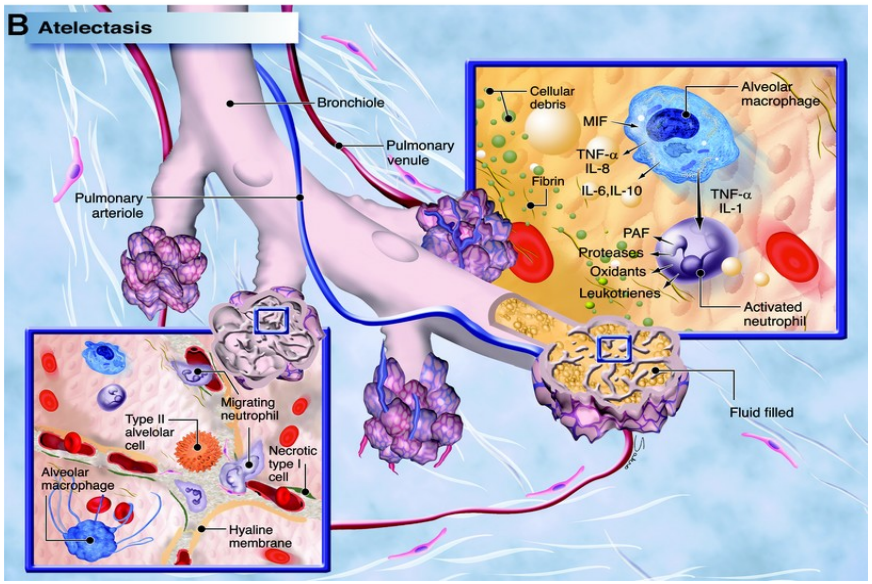
Respiration

- Diffusion of gases in the lung is influenced by several factors, including:
  1. Changes in surface area available
  2. Thickening of alveolar–capillary membrane
  3. Partial pressure

Atelectasis



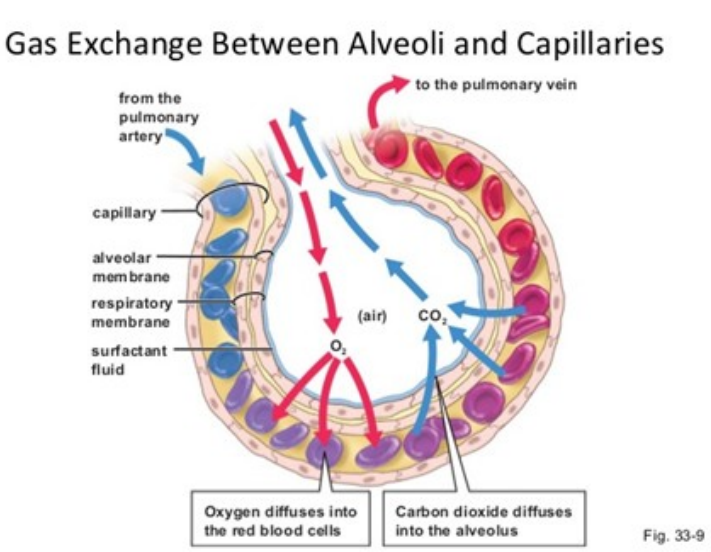


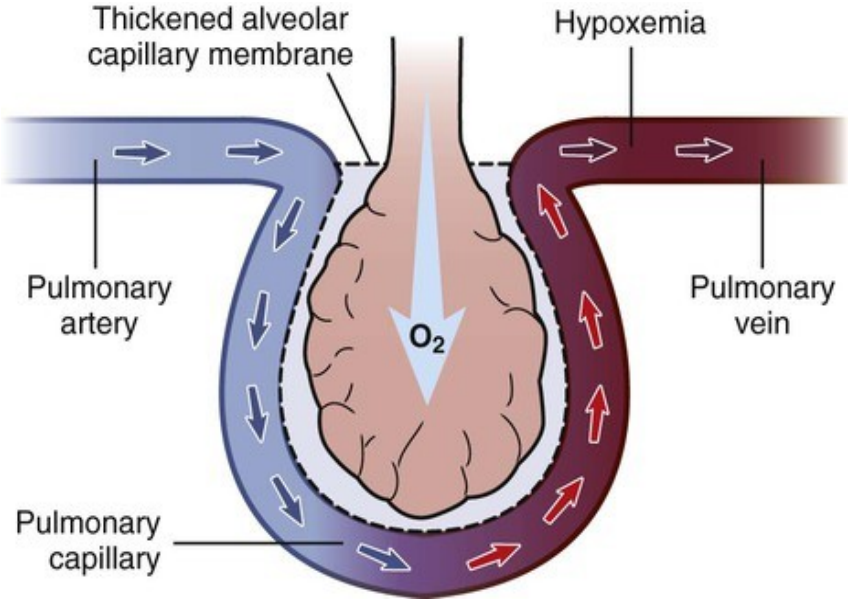


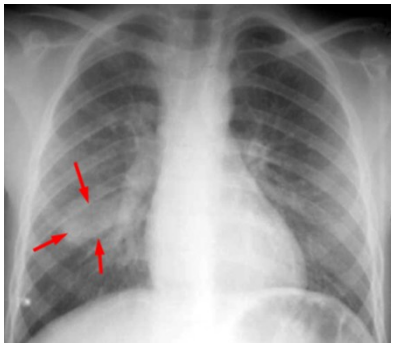
Changes in Surface Area Available

- Any change in the surface area available for diffusion hinders diffusion
- Examples → removal of a lung or the presence of a disease that destroys lung tissue
- Incomplete lung expansion or the collapse of alveoli, known as **atelectasis (collapse of lungs by blockage of the air passages)**, prevents pressure changes and the exchange of gas by diffusion in the lungs, absent lung sound
- Risk factors of atelectasis: prolonged bedrest with out changes of position, ineffective coughing, lung infection or disease, post-operative(after surgery) patient, taking pain medicine
- Shows increased dyspnea, tachypnea, cyanosis, decreased breath sound, pleural pain
- Areas of the lung with atelectasis cannot fulfill the function of respiration

Thickening of Alveolar-Capillary Membrane





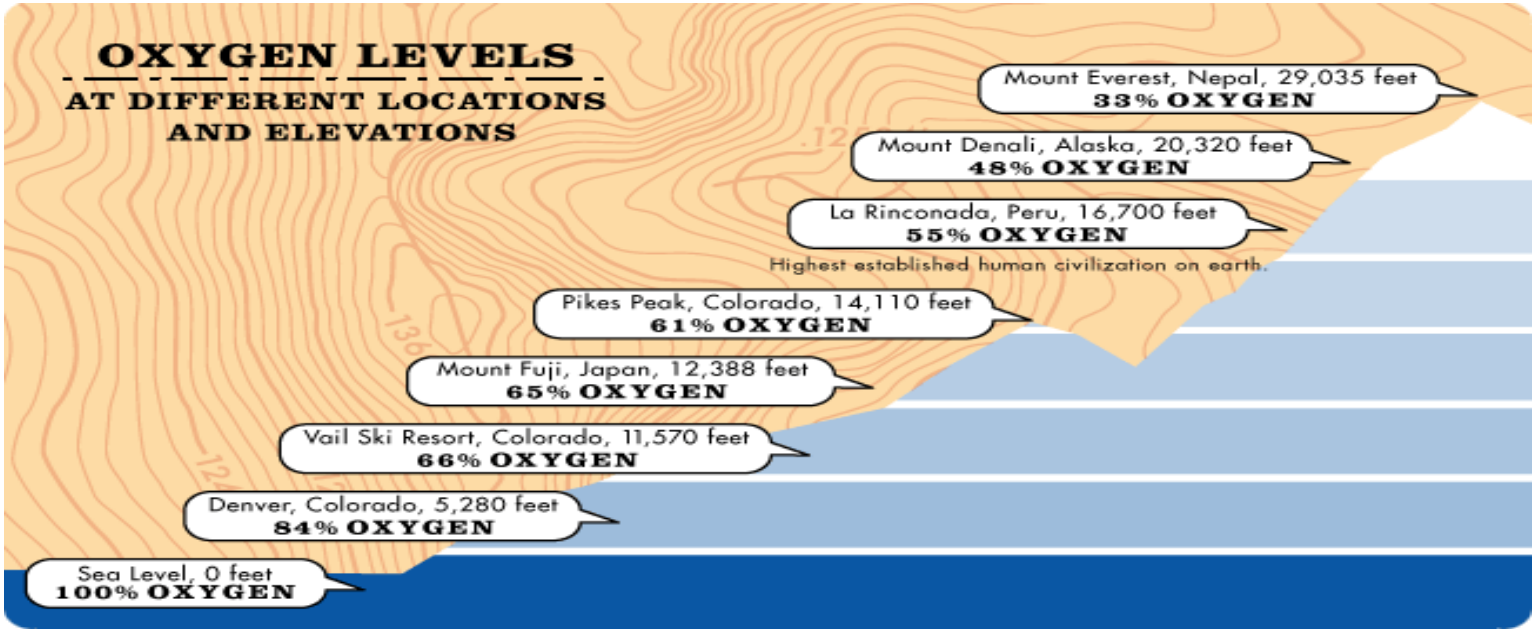


Thickening of Alveolar–Capillary Membrane

- Any disease or condition that results in thickening of the alveolar–capillary membrane, such as pneumonia or pulmonary edema, makes diffusion more difficult

Partial Pressure

- If environmental oxygen is reduced, such as when a person is at higher altitudes or in the presence of toxic fumes, less oxygen is available for diffusion



Perfusion

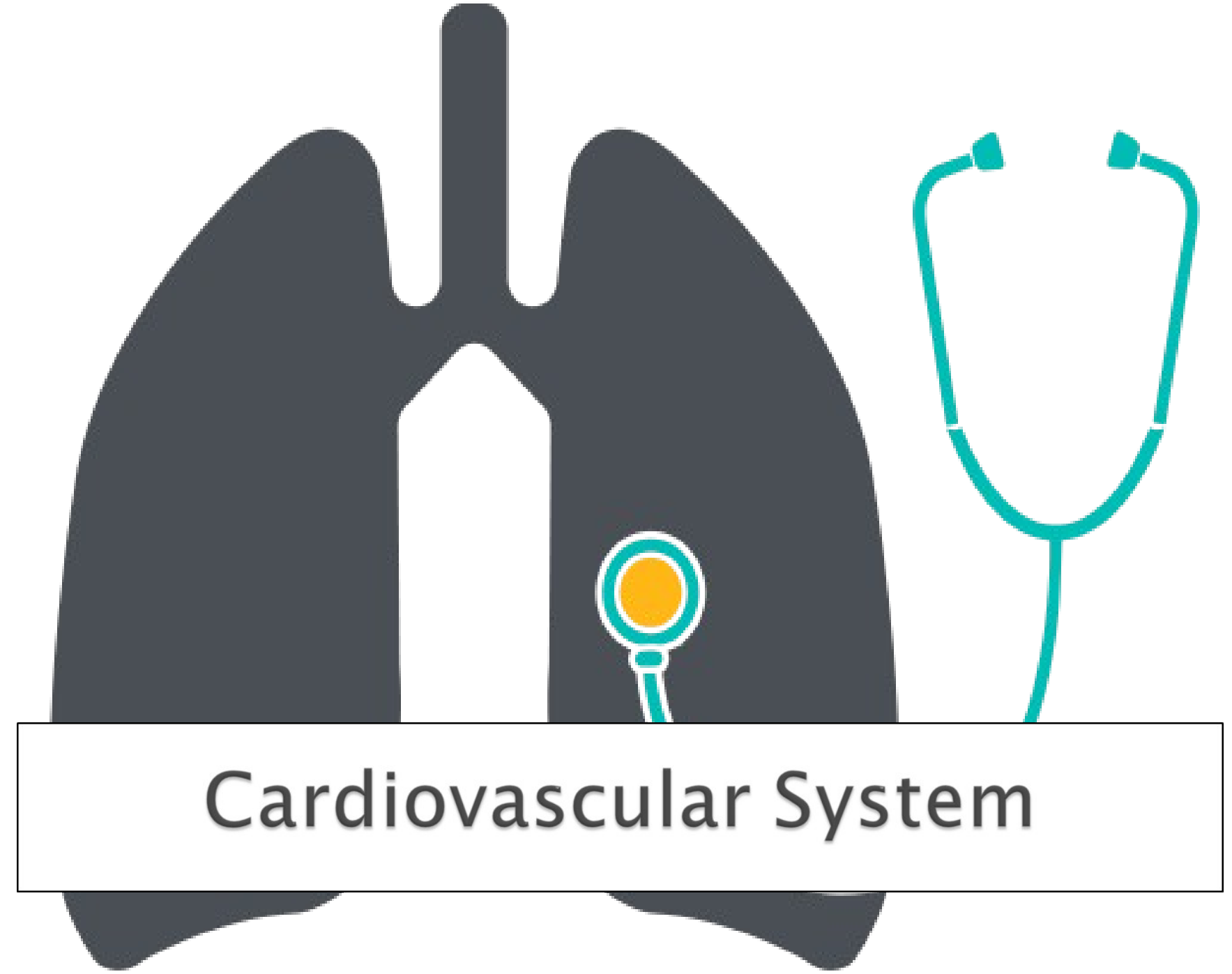
- Amount of blood flowing through the lungs is a factor in the amount of oxygen and other gases that are exchanged
- Amount of blood present depends partially on whether the person is sitting, standing, or lying down
  - Perfusion is greater in dependent areas
- Perfusion of lung tissue also depends on the person's activity level
  - Greater activity = increased need for cellular oxygen = increased blood to lungs
- In addition, perfusion to body's tissues depends on an (1) adequate blood supply and (2) proper cardiovascular functioning to carry oxygen and carbon dioxide to and from the lungs

Regulation of the Respiratory System

- Respiratory center is located in the medulla in the brainstem, immediately above the spinal cord
- It is stimulated by an increased concentration of carbon dioxide and hydrogen ions and, to a lesser degree, by the decreased amount of oxygen in the arterial blood

Alterations in Respiratory Function

- If a problem exists in ventilation, respiration, or perfusion → hypoxia may occur
- **Hypoxia** → inadequate amount of oxygen is available to cells
- Most common symptoms of hypoxia are:
  - **Dyspnea** (difficulty breathing)
  - Elevated BP
  - Increased RR and pulse
  - Cyanosis
  - Anxiety, restlessness, confusion, and drowsiness
- Hypoxia can also be a chronic condition
  - Effects of chronic hypoxia → manifested as altered thought processes, headaches, chest pain, enlarged heart, clubbing of the fingers and toes, anorexia, constipation, decreased urinary output, decreased libido, weakness of extremity muscles, and muscle pain

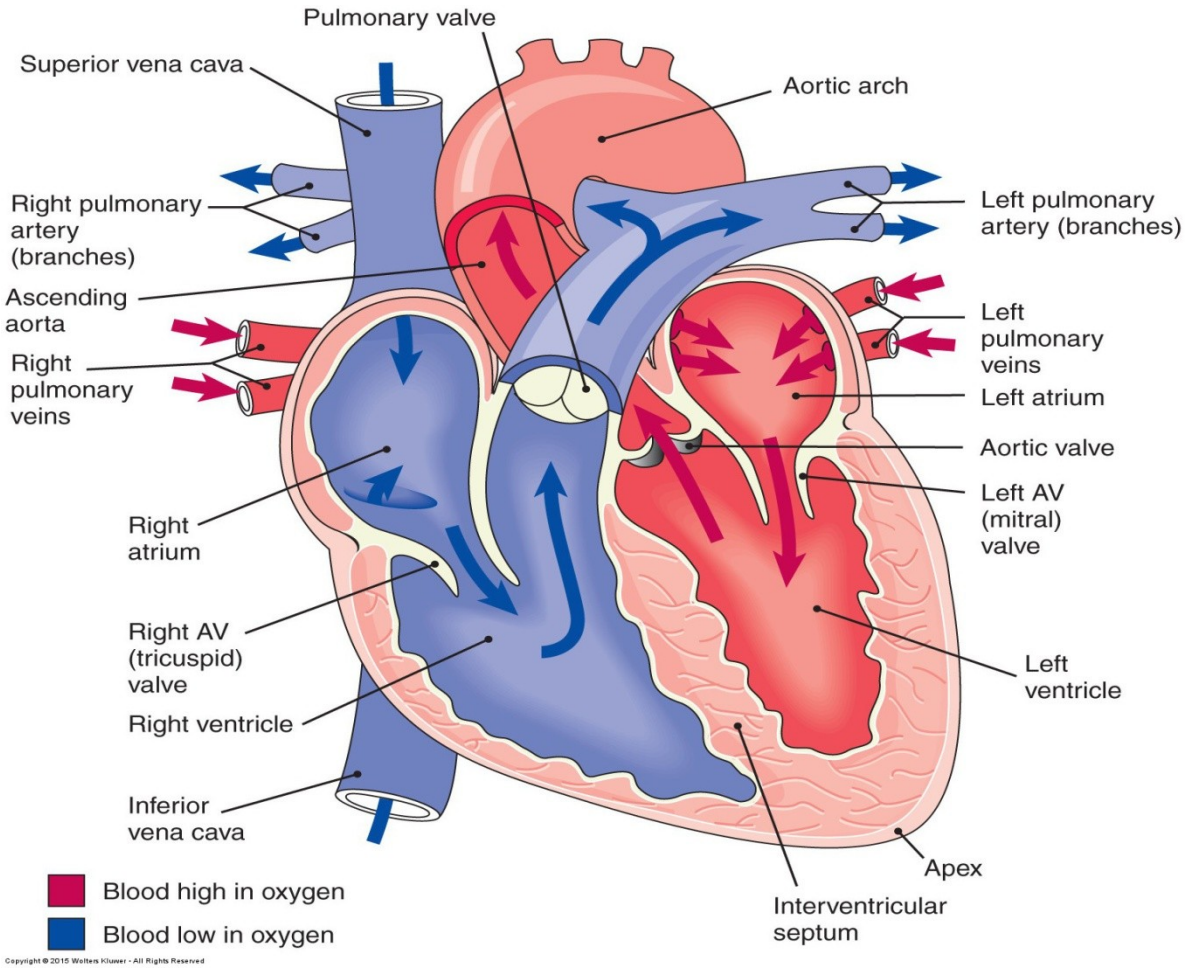


Cardiovascular System

Anatomy of Cardiovascular System

- Cardiovascular system
  - Composed of the heart and the blood vessels
  - Heart is the main organ of circulation → it is the pump

Anatomy of Cardiovascular System



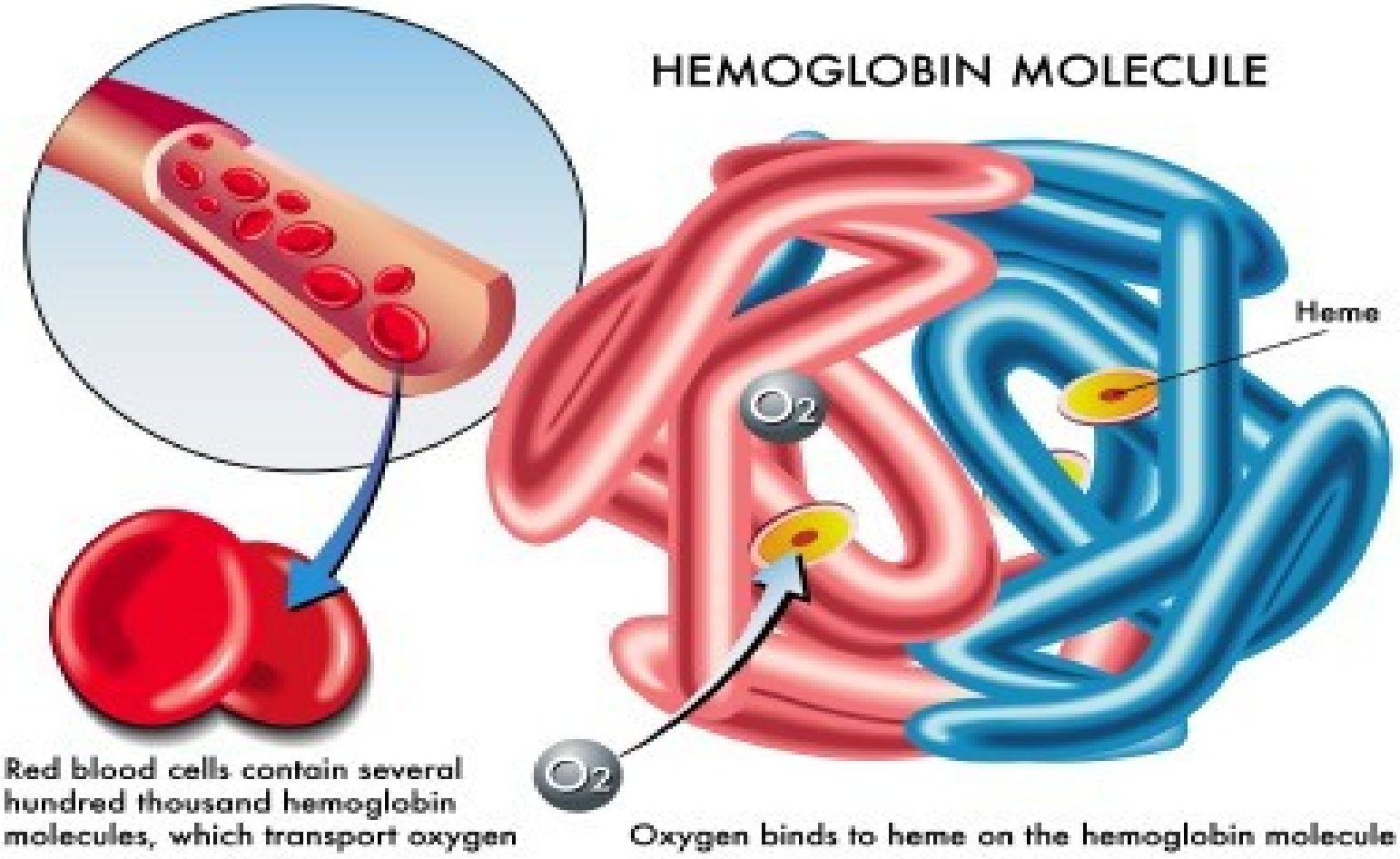
Anatomy of Cardiovascular System

- The heart hass 4 chambers:
  - Upper chambers → atria
  - Lower chambers → ventricles
  - One-way valves: Tricuspid, Mitral, Pulmonary, Aortic
  - Arteries and arterioles → blood away
  - Venules and veins → return blood
  - Capillaries → exchange of substances between the blood and the body cells

Physiology of Cardiovascular System

- Deoxygenated blood is carried from the right side of the heart to the lungs where oxygen is picked up and carbon dioxide is released, and then returned to the left side of the heart
- Oxygenated blood is pumped out to all other parts of the bod
- Quantity of blood forced out of left ventricle with each contraction → **stroke volume** (SV)
- Cardiac output (CO) is the amount of blood pumped per minute
  - Averages from 3.5 L/min to 8.0 L/min in a healthy adult
  - CO = SV x HR
- Most oxygen (97%) is carried in the body by RBCs as part of Hgb in the form of oxyhemoglobin

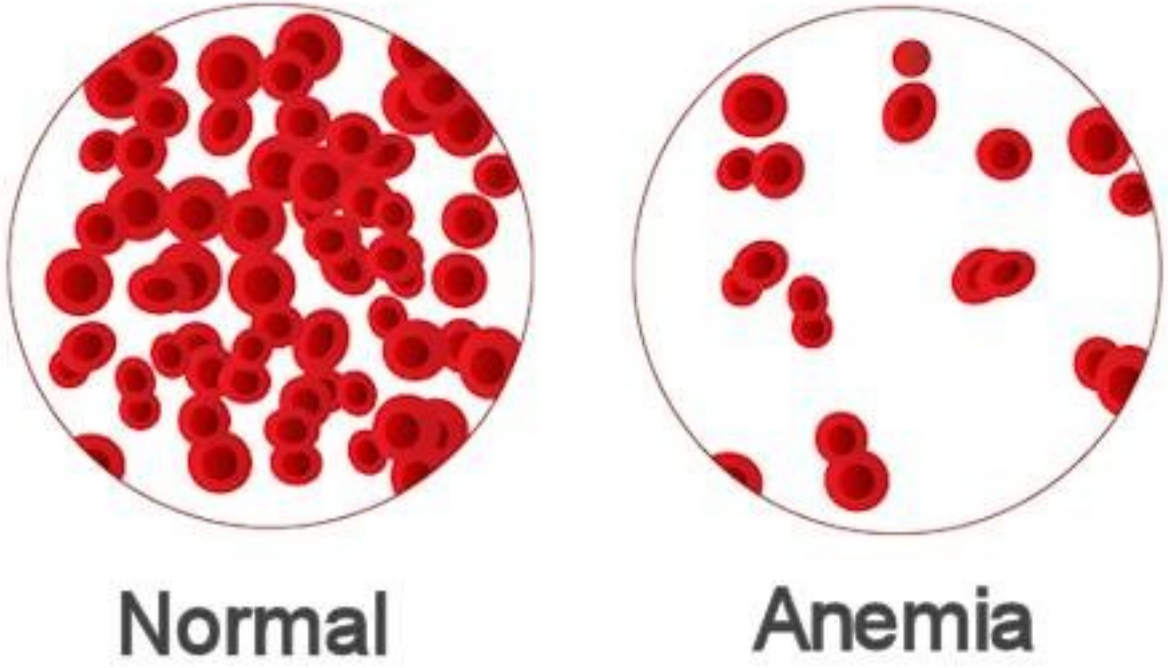
RBC & Hgb


HEMOGLOBIN MOLECULE
Heme
O2
O2
Red blood cells contain several hundred thousand hemoglobin molecules, which transport oxygen
Oxygen binds to heme on the hemoglobin molecule

Physiology of Cardiovascular System

- Once RBCs reach the tissues the exchange of oxygen and carbon dioxide between the circulating blood and the tissue cells occurs
- Abnormalities in blood's components affects this exchange
  - **Anemia**, a decrease in the amount of red blood cells or erythrocytes, results in insufficient hemoglobin available to transport oxygen

Anemia



Factors Affecting Cardiopulmonary Functioning & Oxygenation

- Level of Health
  - Acute & chronic illnesses
- Developmental Considerations
- Medication Considerations
- Lifestyle Considerations
- Environmental Considerations
- Psychological Health Considerations

Level of Health

- Presence of acute or chronic illnesses
  - Examples:
    - Patients w/ renal or cardiac disorders often have compromised respiratory functioning d/t fluid overload & impaired tissue perfusion
    - Patients w/ alterations in muscle function contribute to inadequate pulmonary ventilation and respiration
    - Anemia → may lead to an inadequate supply of oxygen to the tissues of the body
    - Myocardial infarction → damage to the heart muscle interferes with effective contractions of the heart muscle, leading to decreased perfusion of tissues and decreased gas exchange
    - Physical changes such as scoliosis (curvature of the spine) influence breathing patterns and may cause air trapping
    - Obesity → SOB w/ exertion, ultimately leading to less participation in exercise; as a result, the alveoli at the base of the lungs are rarely stimulated to expand fully

Developmental Considerations

- Older Adults –> Age-related Changes
  - Decreased Gas Exchange and Increased Work of Breathing
    - Decreased elastic recoil of the lungs
    - Expiration requiring use of accessory muscles
    - Fewer functional capillaries and more fibrous tissue in alveoli
    - Decreased skeletal muscle strength in thorax
    - Reduction in vital capacity and increase in residual volume
  - Decreased Ventilation and Ineffective Cough
    - Less air exchange; more secretions remain in lungs
    - Drier mucous membranes
    - Altered pain sensation
    - Different norms for body temperature; fever may be atypical
    - Greater risk for aspiration due to slower gastric motility
    - Impaired mobility and inactivity, effects of medication
  - Decreased Cardiac Output and Ability to Respond to Stress
    - Reduction in the elasticity of the heart's tissues
    - Heart muscle becomes less efficient—working harder to pump the same amount of blood through the body
    - Progressive atherosclerosis (fatty buildup or plaques, thickening) in arterial walls and loss of elasticity
    - Capillary walls thicken slightly, leading to a slower rate of exchange of gases, nutrients, and waste

Developmental Considerations

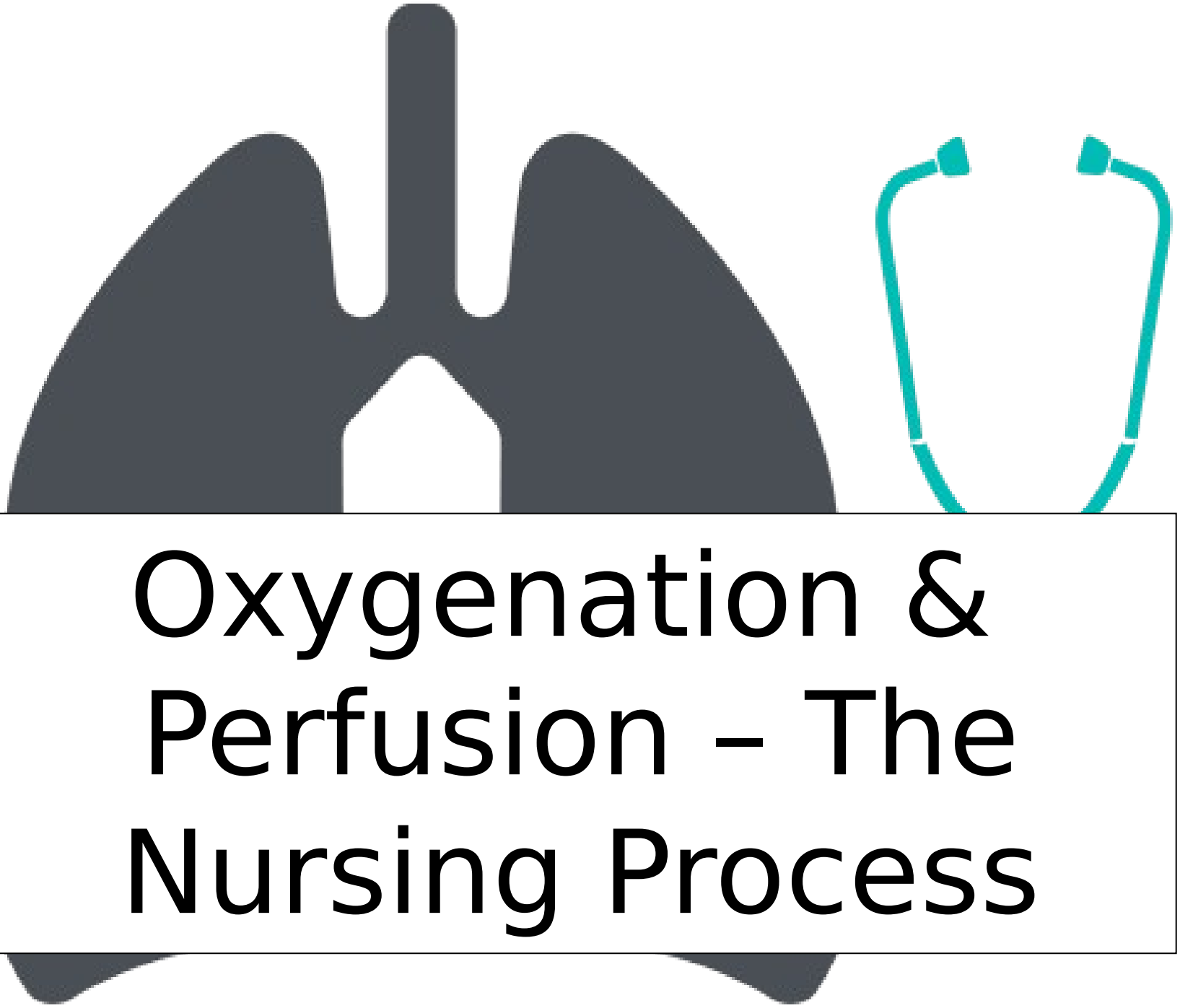
- Older Adults -> Nursing Strategies
  - Decreased Gas Exchange & Increased Work of Breathing
    - Encourage rest periods, as necessary
    - Encourage cessation or moderation of smoking and second-hand smoke exposure
    - Teach breathing exercises
    - Remind about avoiding air pollutants
    - Caution about effect of extreme weather conditions
    - Instruct to avoid narcotics and sleeping pills
    - Discuss home management with patient and family
    - Teach avoidance of infection and preventive measures (i.e., pneumococcal and flu vaccination)
    - Use pillows as necessary to sleep
  - Decreased Ventilation & Ineffective Cough
    - Encourage increased fluid intake (fluid intake thinning respiratory secretion and make easy to secretion out), especially water, as allowed
    - Use cool-mist humidifier (teach proper cleaning technique)
    - Encourage attendance at pulmonary exercise rehabilitation program
    - Discourage use of over-the-counter medications
    - Teach how to splint thorax and cough effectively
    - Instruct in use of supplemental oxygen
    - Teach avoidance of milk products if they are troublesome
  - Decreased Cardiac Output & Ability to Respond to Stress
    - Encourage the inclusion of physical activity in the daily routine; pace activities
    - Encourage a healthy low-fat, low-salt diet, including plenty of fruits, vegetables and whole grains
    - Assist with smoking cessation and/or avoid the use of tobacco
    - Teach the importance of regular check-ups
    - Assist with weight control. • Teach the importance of medication compliance
    - Teach stress-reduction activities.

Lifestyle Considerations

- Activity levels
  - Sedentary activity patterns do not encourage the expansion of alveoli and the development of pulmonary exercise patterns (deep breathing)
  - Regular physical activity provides many health benefits, including increased heart and lung fitness, improved muscle fitness, and reducing the risk of heart disease
- Cigarette smoking

Psychological Health Considerations

- Many psychological factors and conditions can affect the respiratory system
  - People responding to stress may sigh excessively or exhibit hyperventilation (increased rate and depth of ventilation, above the body's normal metabolic requirements)
  - **Hyperventilation** can lead to a lowered level of arterial carbon dioxide
  - Generalized anxiety has been shown to cause enough bronchospasm to produce an episode of bronchial asthma
  - In addition, patients with respiratory problems often develop some anxiety as a result of the hypoxia caused by the respiratory problem



Oxygenation & Perfusion – The Nursing Process

Nursing History

Factors to Assess	Questions & Approaches
Usual patterns of respiration	How would you describe your breathing? Do you have allergies? What type(s) of allergies do you have? What relief measures do you use?
Medications	Are you taking any medications for your breathing, your heart, or for your blood pressure? What other medications are you taking?
Health History	Do you have any heart, lung, or breathing conditions? Does anyone in your family/home have any breathing conditions or respiratory infections?
Recent Changes	Have you noticed any changes in your breathing (out of breath, cough, wheezing)? Have you noticed any changes in your ability to perform activities of daily living? Do you have any swelling or redness in your arms or legs? Do you have a respiratory infection? If so, what type? What relief measures are you using?
Lifestyle & Environment	Do you smoke? If so, how many years have you smoked? How much do you smoke (i.e., how many packs per day or year)? Do you live with a smoker or are there smokers in your workplace? Are you exposed to respiratory irritants in your workplace? Are there other pollutants in your workplace?
Cough	How much and how often do you cough? What is it like (dry, bubbly, hoarse)? Do you cough up mucus? If so, how much and what does it look like? Do you have a history of allergies? Do you ever wheeze? Are you exposed to dust? Fumes?
Sputum	Do you ever cough up and spit out mucus? How much do you spit out and do you associate it with anything (time of day, environment)? What color is it? Is it ever blood tinged? What is its odor?
Pain	Do you have any chest pain? Do you have pain with breathing? Do you have pain in the arms or legs? When did it start? On a scale of 0 to 10 (10 being very painful), how severe is the pain? Where is the pain? Is the pain worse with inspiration? Expiration? Cough? Activity? Does the pain radiate? What measures are you using to relieve the pain?
Dyspnea	Is it constant or remittent or related to any activity? How do different positions affect it? How does it affect your daily activities? Can you sleep lying flat? How many pillows do you use?
Fever	Have you had pneumonia recently? Do you have any contact with people who have tuberculosis? Do you have night sweats? Are others in your household well or ill? Have you traveled anywhere recently?
Fatigue	Have you noticed you feel more tired lately? Are you getting your normal amount of sleep at night? Has your sleep at night been affected by any difficulty breathing? Do you become easily fatigued when you climb stairs?

Physical Assessment

- **Pallor** (lack of color) of skin and mucous membranes can indicate less than optimal oxygenation
- **Cyanosis** (bluish discoloration) of these areas indicates decreased blood flow or poor blood oxygenation
- Normal respirations are quiet & non-labored & 12-20 times per minute
- **Tachypnea** → rapid breathing
- **Bradypnea** → slow breathing

Physical Assessment (cont…)

Auscultation of the Lungs

- Normal breath sounds include:
  - Vesicular → low-pitched, soft sounds heard over peripheral lung fields
  - Bronchial → loud, high-pitched sounds heard primarily over the trachea and larynx
  - Bronchovesicular → medium-pitched blowing sounds heard over the major bronchi
- **Adventitious** sounds → extra, abnormal sounds of breathing
  - **Crackles**
    - Frequently heard on inspiration, soft, high-pitched discontinuous (intermittent) popping sounds
    - Produced by fluid in the airways or alveoli and delayed reopening of collapsed alveoli
    - Occur d/t inflammation or congestion & are associated w/ pneumonia, CHF, bronchitis, & COPD
  - **Wheezes**
    - Continuous musical sounds, produced as air passes through airways constricted by swelling, narrowing, secretions, or tumors
    - Often heard in patients with asthma, tumors, or a buildup of secretions

Physical Assessment (cont…)

Auscultation of the heart

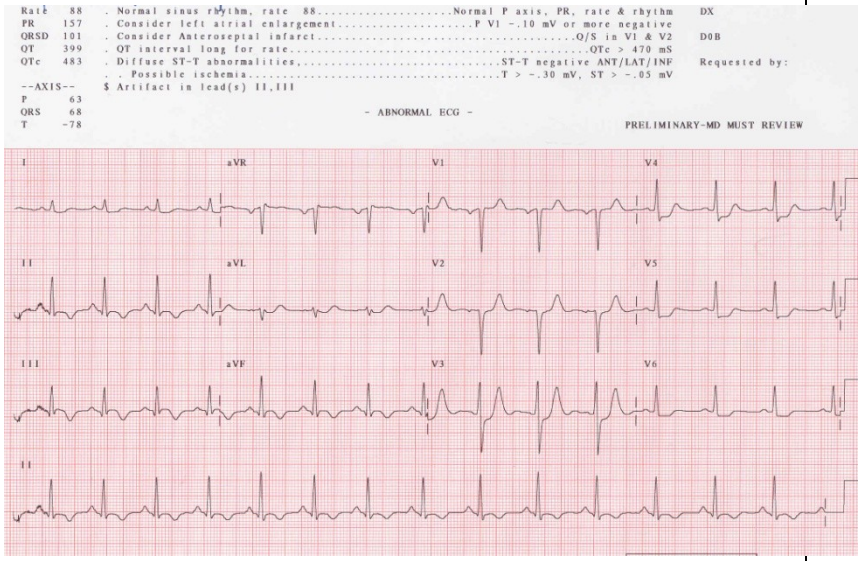
- Assesses function of the heart, heart valves, and blood flow
- Listen for normal and abnormal heart sounds
- Listen to the rhythm of the beat and the characteristic “lub-dub”
  - 1st sound, the lub, is followed by 2nd sound, the dub, with a pause before the next lub-dub
  - These sounds are made by the closure of valves in the heart during the cardiac cycle
  - The lub correlates with the beginning of systole (the contraction of the ventricles) & is called S1
  - The dub correlates with the end of systole and the beginning of diastole (relaxation of the ventricles) & is called S2
  - In addition to S1 and S2, listen for extra and abnormal heart sounds; abnormal heart sounds occur as a result of alterations in the cardiovascular system that may lead to impaired oxygenation

Common Diagnostic Studies

- EKG
- PFTs
- Pulse Ox
- Capnography
- ABG's
- CXR
- Cardiac evaluation:
  - Cardiac catheterization, exercise stress testing, echocardiogram, endoscopic studies, holter monitor, V/Q lung scan

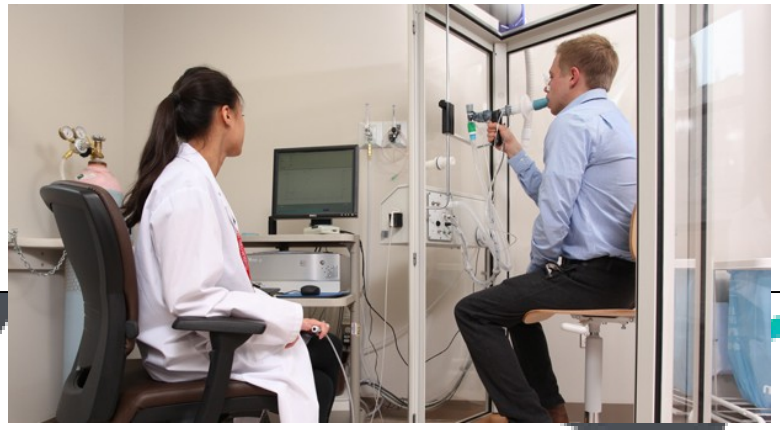
Electrocardiogram (EKG)

- ECG or EKG
  - 12-lead EKG
  - Measures heart's electrical activity



Pulmonary Function Studies

- PFTs
  - Encompass a group of tests used to assess respiratory function to assist in evaluating respiratory disorders
  - Provide an evaluation of lung dysfunction, diagnose disease, assess disease severity, assist in management of disease, and evaluate respiratory interventions

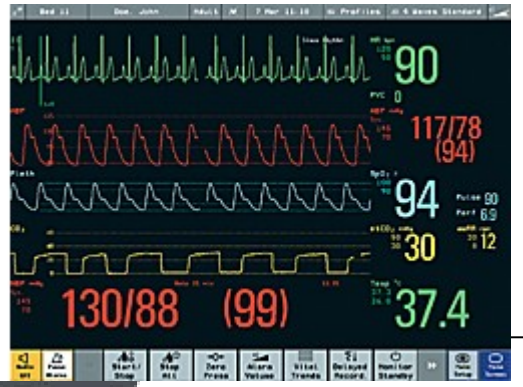


Pulse Oximetry

- See ATI

Capnography

- Monitors ventilation and, indirectly, blood flow through the lungs
- Exhaled air passes through a sensor that measures the amount of carbon dioxide (CO2) exhaled with each breath
- Reported results also provide information about the respiratory rate and depth, the presence of apnea, and efficiency of gas exchange
- When carbon dioxide levels are abnormal, either high or low, adverse effects, including death, can occur
- Capnography can detect signs of hypoventilation earlier than pulse oximetry



Arterial Blood Gases (ABGs)

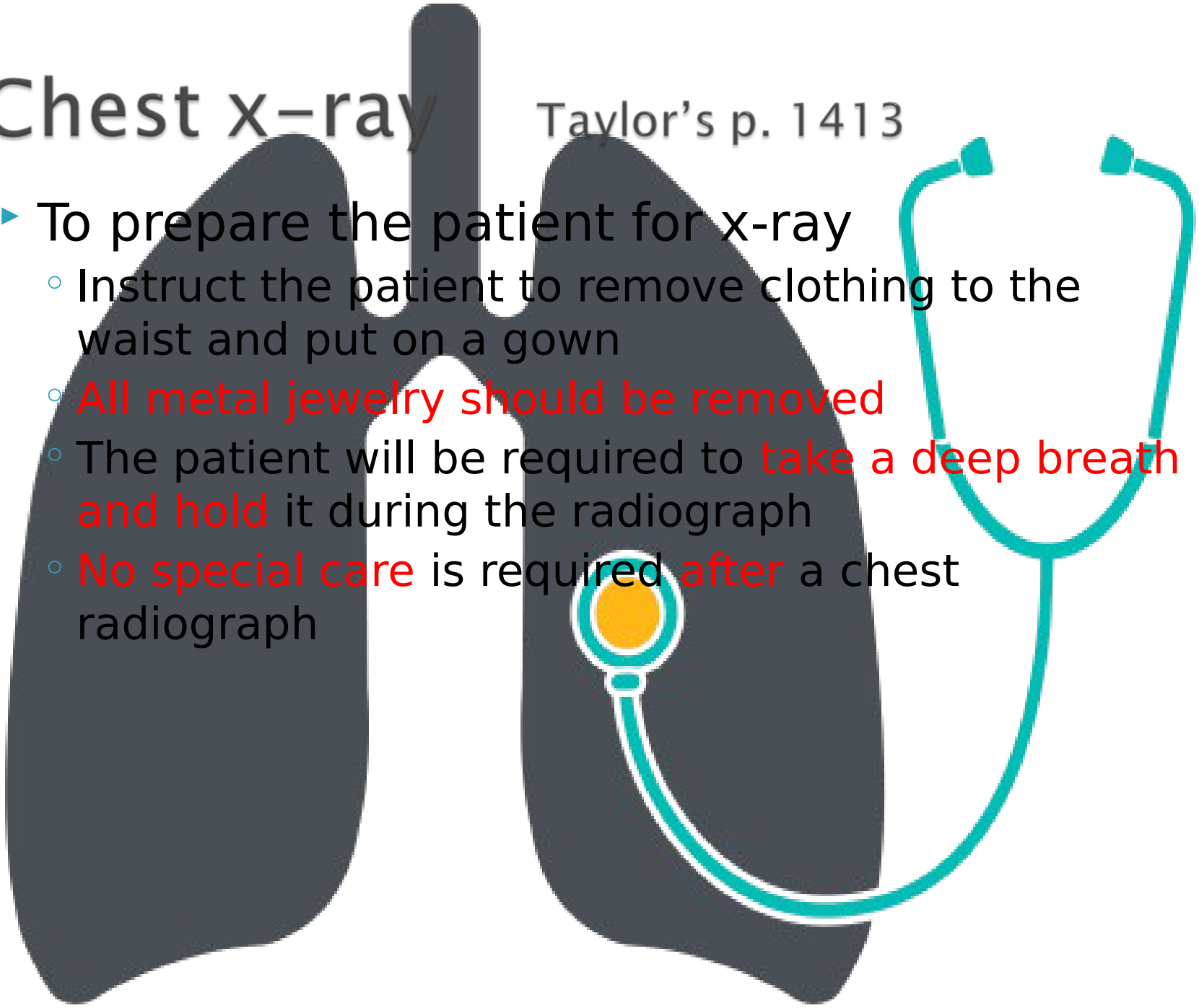
- pH, PCO_2, PO_2, HCO_3, Base Excess

Chest X-ray (CXR)

Chest x-ray

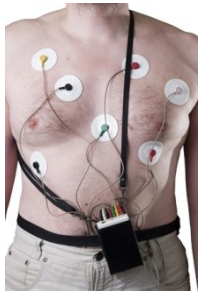
Taylor's p. 1413

- To prepare the patient for x-ray
  - Instruct the patient to remove clothing to the waist and put on a gown
  - All metal jewelry should be removed
  - The patient will be required to take a deep breath and hold it during the radiograph
  - No special care is required after a chest radiograph



Other Common Diagnostics Taylor's p. 1412 Table 38-3

- CBC (Complete Blood Count)
  - RBC, WBC, hemoglobin,
  - Hematocrit counts
  - Anemia, Leukemia,
  - Abnormal blood counts
- Cardiac biomarkers
- Cardiac catheterization
- Exercise stress testing
- Echocardiogram
- Holter monitor
- V/Q lung scan/CT scan



Nursing Diagnosis

Taylor's p. 1416

- Ineffective Airway Clearance
  - Related to fatigue; decreased intake of fluids; poor nutrition, a 20-year history of COPD (Chronic Obstructive Pulmonary Disease: emphysema, bronchitis), with recent development of pneumonia
- Impaired Gas Exchange
  - Smokes one pack of cigarettes per day; works with asbestos in auto factory; has had a cold for 7 days
- Ineffective Breathing Pattern
  - Anxious about results of cardiac catheterization and possible cardiac surgery
- Decreased Cardiac Output

Outcome Identification & Planning

- The patient will:
  - Demonstrate improved gas exchange in the lungs by an absence of cyanosis or chest pain and a pulse oximetry reading more than 95%
  - Relate the causative factors, if known, and demonstrate a method of coping with these factors
  - Preserve cardiopulmonary function by maintaining an optimal level of activity
  - Demonstrate self-care behaviors that provide relief from symptoms and prevent further cardiopulmonary problems

Implementing

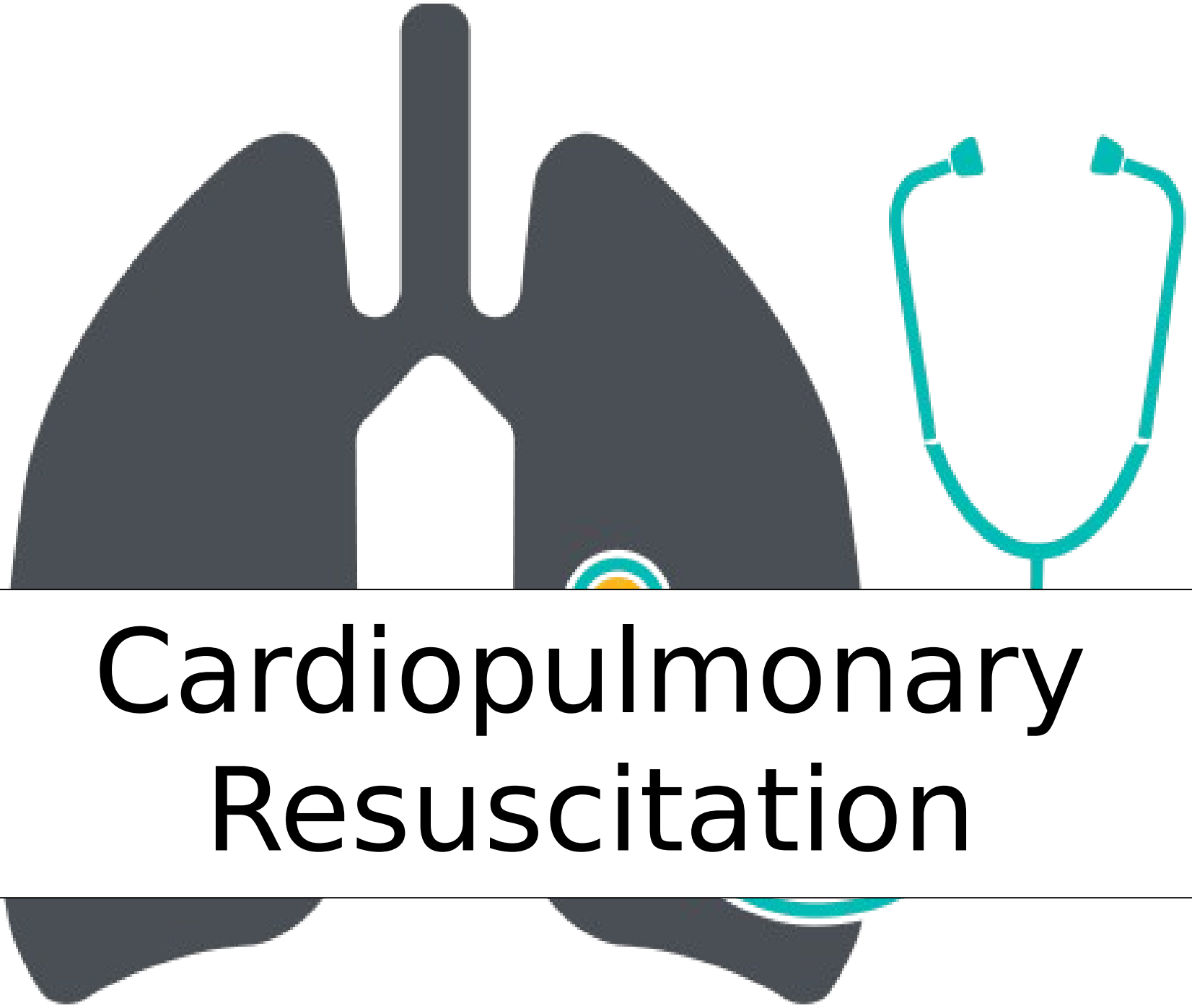
- Nursing interventions related to oxygenation aim to:
  - promote optimal functioning of the cardiopulmonary systems
  - promote comfort
  - promote and control coughing
- Nurses may also need to intervene by:
  - performing chest physiotherapy
  - suctioning the airway
  - meeting respiratory needs with medications
  - providing supplemental oxygen
  - managing chest tubes
  - using artificial airways
  - clearing an obstructed airway
  - administering CPR

Promoting Optimal Function

- Healthy Lifestyle
  - Regular exercise
  - Monitor cholesterol
  - Monitor BP
  - Limit alcohol intake
  - Stop smoking
- Vaccination
  - Influenza
  - Pneumonia

Promoting Optimal Function (cont…)

- Teaching about pollution-free environments
  - Especially important for people with cardiopulmonary problems
  - Patient must actively plan to prevent exposure to pollutants and triggers
- Reducing anxiety
- Maintaining good nutrition
- Promoting Comfort
  - Positioning → position that allows free movement of diaphragm & expansion of chest wall
- Maintaining Adequate Fluid Intake
  - Keep secretions thin by drinking 2-3 quarts of clear fluids daily
- Providing Humidified Air
  - Inspiring dry air removes the normal moisture in the respiratory passages that protects against irritation & infection



Cardiopulmonary Resuscitation

Administering Cardiopulmonary Resuscitation

- Cardiopulmonary resuscitation (CPR) is the combination of chest compressions, which circulate blood, and mouth-to-mouth breathing, which supplies oxygen to the lungs
- After checking the victim for a response, activate the emergency response system, get an automated external defibrillator (AED) or defibrillator, and begin CPR with the CAB sequence:
  - **Chest Compressions**: Check the pulse (Carotid: most accurate and close to heart). If the victim has no pulse, initiate chest compressions to provide artificial circulation
  - **Airway**: Tilt the head and lift the chin; check for breathing. The respiratory tract must be opened so that air can enter
  - **Breathing**: If the victim does not start to breathe spontaneously after the airway is opened, give two breaths lasting 1 second each
  - **Defibrillation**: Apply the AED as soon as it is available

Administering Cardiopulmonary Resuscitation

- Start CPR in any situation in which either breathing alone or breathing and a heartbeat are absent
- The brain is sensitive to hypoxia and will sustain irreversible damage after 4 to 6 minutes of no oxygen
- The faster CPR is initiated, the greater the chance of survival
- During CPR, standard precautions are followed even though contact with a patient's blood or body fluids does not always occur

Administering Cardiopulmonary Resuscitation

- Automated external defibrillator (AED) has also proved effective in reducing deaths attributed to cardiac arrest
- This easy-to-use, computer-based device is designed to deliver a shock to the heart muscle quickly to interrupt ventricular fibrillation, the most common initial rhythm occurring in cardiac arrest
- AED has the ability to analyze the heart's rhythm, direct the operator to deliver a shock when appropriate or deliver one auto-matically, and then reanalyze the rhythm to determine whether it has returned to normal

Automated External Defibrillator

Administering Cardiopulmonary Resuscitation

- The nurse is professionally responsible for maintaining proficiency in CPR skills
- This necessitates periodic practice with mannequins (adult and infant)
- CPR must be administered quickly and accurately, without hesitation, when cardiac or pulmonary arrest occurs
- Push hard and fast in the center of the victim’s chest
- Studies of real emergencies that have occurred in homes, at work, or in public locations show that these two steps, called Hands-Only CPR, can be as effective as conventional CPR
- Providing Hands-Only CPR to an adult who has collapsed from a sudden cardiac arrest can more than double or triple that person’s chance of survival

Chest Compressions